

On a Chinese Planisphere. By E. B. Knobel.
(Plates 17, 18.)

There was exhibited in the Science Section of the Franco-British Exhibition, by the Royal Scottish Museum, a bronze instrument described in the catalogue as "A Bronze Compass 13½ inches diameter, taken from a Japanese Junk, with raised dots in centre said to represent Stars"; a further label stated that it was believed to represent all the stars visible in Japan.

The instrument is undoubtedly Chinese, and is a planisphere of the heavens, on which the stars are indicated according to the Chinese constellations.

Original Chinese planispheres, whether on metal or paper, are extremely rare. Nothing of the sort is found at the British Museum, though it is possible that some maps of the stars may hereafter be discovered in the collection of Chinese books and manuscripts. The only sources of information known to me are—

(1) *Atlas Celeste Chinoise*, by P. Grimaldi, Soc. Jesu, printed in China, 1711. In these maps the Chinese asterisms are engraved on maps of Tycho Brahe's stars.

(2) The maps of De Guignes in vol. x. of the *Mémoires de l'Académie présentés par divers Savants*, 1785, in which the Chinese asterisms are engraved on the stellar maps of De la Hire.

(3) Williams' work, *Chinese Observations of Comets*, 1871, wherein he gives Chinese stellar maps copied from a Chinese work in the library of University College, London; and

(4) Schlegel's *Uranographie Chinoise*, which is a very exhaustive work on the subject, and must always be considered of the highest value.

All the above, however, are probably from sources subsequent to the Jesuit expedition to China in the 17th. century. In many cases the planisphere in question differs from these texts; and, for the above reasons, I think it may be interesting to offer to the Society some description of the instrument.*

The planisphere or map of the heavens is about 9½ inches diameter. It is a quasi-polar equidistant projection of the sphere, but extended to about 50° south of the equator. The stars are indicated by raised dots, which are linked together according to the usual method with the Chinese, each group of stars so united forming one of their numerous asterisms.

In studying the planisphere it should be remembered that there is no connection whatever between Chinese constellations and those with which we are familiar in Europe, though some well-known groups of stars, like Charles's Wain in Ursa Major, the Pleiades and Hyades in Taurus, and the principal stars in Orion and Corvus form definite Chinese asterisms.

* The Society formerly possessed several Chinese planispheres, as appears from a list published in the 15th volume of the *Monthly Notices*, but these have all disappeared and cannot be found.

The essential difference is that the constellations as we know them are roughly defined areas of the heavens, whereas the Chinese asterisms consist of one or more stars, singly having a special significance, or united together in some definite form, or with some definite idea; in no case are they areas of the heavens. It will be admitted that there are some advantages in this system over the vague constellations which we have inherited from the Greeks. One other point is important, namely, that the relative magnitude of the stars is to a great extent ignored, so that an asterism which may consist of stars of the 1st. to the 6th. magnitude may all be represented as of the same size. It is obvious that this adds very much to the difficulty of identification.

The instrument is shown in the accompanying photograph.*

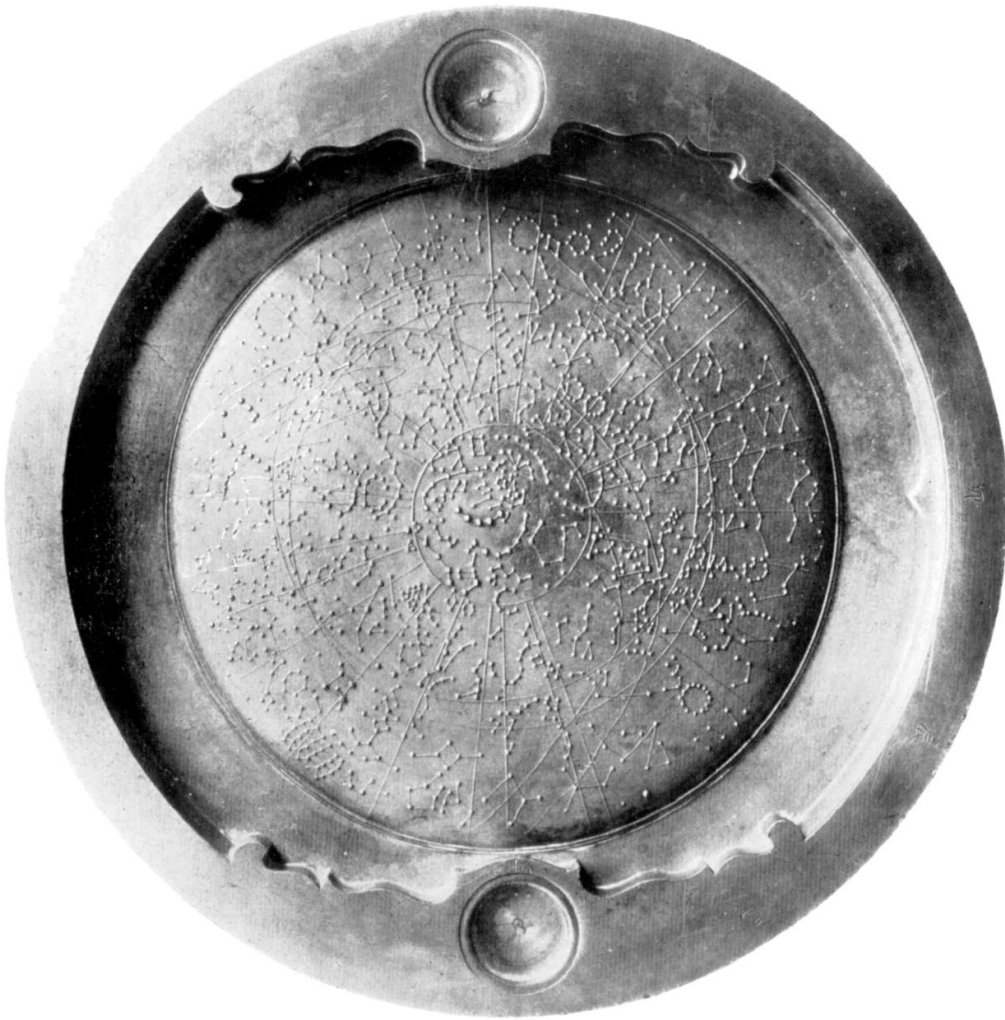
The centre of the planisphere is the pole of the equator. The projection appears to be equidistant, and at a North Polar distance of 38° is a circle bounding the area of Perpetual Apparition. This indicates that the instrument has been constructed for a latitude a little south of Pekin. The equator is shown, and also the ecliptic, but the obliquity is very incorrect. The Milky Way is also shown in outline fairly correctly.

Radiating from the pole, but not extending into the area of perpetual apparition, are lines at unequal angular distances. These indicate the 28 "Siou," which are the "Domiciles," "Mansions of the Moon," "Stellar Divisions," and "Lunar Zodiac," of which a table is given below.

There are no numbers or names on the planisphere, and therefore all references are to the photographic chart accompanying this paper, which I have made from an enlarged photograph of the instrument. On this I have numbered the Siou, and indicated the principal European constellations by words, and many of the Chinese asterisms by numbers.

The angular intervals of the Siou are measured on the equator, but they are not quite the same as in other authorities, so the table gives also the values from Schlegel's *Uranographie Chinoise*, and from Williams' *Chinese Observations of Comets*. Following Schlegel, Williams, and Wells Williams in his Chinese Dictionary, I have adopted Kio as the first Siou, though Professor W. D. Whitney of Yale College, following Biot, has presented strong arguments in favour of Mao being the first.

* I am indebted to Dr. Dobbie, Director of the Royal Scottish Museum, for his courteous permission to reproduce the photograph of the instrument which he kindly sent me.



CHINESE PLANISPHERE.



Table of Siou.

No.	Name.*	Meaning.	Royal Scottish Planisphere.	Schlegel.	Williams.
I.	Kio	The horn	12 0	12 0	11
II.	Kang	The neck	9 0	9 0	11
III.	Ti	The base	14 20	16 0	18
IV.	Fang	The house	4 40	5 30	5
V.	Sin	The heart	5 20	6 20	7
VI.	Wi	The tail	17 0	18 50	16
VII.	Ki	The sieve	11 30	10 20	9
VIII.	Teou	The measure	25 30	25 0	24
IX.	Niou	The ox	7 40	7 0	8
X.	Niu	The virgin	11 40	11 10	12
XI.	Hiu	The funeral mound	10 20	8 50	10
XII.	Wei	The ridge	17 0	15 10	20
XIII.	Che	The funeral pyre	15 30	16 50	15
XIV.	Pi	The wall	9 0	8 30	12
XV.	Kouei	The stride †	14 30	16 20	12
XVI.	Leou	The reaper	11 30	11 40	13
XVII.	Wei	The grain store-room	13 30	15 20	13
XVIII.	Mao	The setting sun	11 0	11 0	8
XIX.	Pi	The bird-net	15 30	17 15	15
XX.	Tsoui	The mouth	2 20	0 5	1
XXI.	Tsan	The august	9 0	11 0	11
XXII.	Tsing	The well	32 30	32 50	31
XXIII.	Kouei	The manes	4 0	2 10	4
XXIV.	Liou	The willow	15 0	13 10	17
XXV.	Sing	The asterism	8 0	6 10	9
XXVI.	Tchang	The open net	18 0	17 0	18
XXVII.	Yih	The wings	17 40	18 30	17
XXVIII.	Tchin	The car	17 0	17 0	13
			360 0	360 0	360

On the rim surrounding the planisphere are engraved the names of the twelve Horary Characters or Branches, which indicate the Months, the Chinese hours (each of 120 minutes), and the points of the compass.

* As so much diversity of opinion exists in writing the phonetic value of Chinese words in Roman letters, I have in all cases adopted the transliteration of Schlegel, not because it is the most correct, but for convenience, and to ensure some uniformity.

† The sandal (Schlegel).

Chinese Name.	Months.	Hours.	Points of the Compass.
子 Tsse	December	11 P.M. to 1 A.M.	North
丑 Tcheou	January	1 A.M. ,, 3 A.M.	NNE $\frac{3}{4}$ E
寅 Yin	February	3 ,, ,, 5 ,,	ENE $\frac{3}{4}$ N
卯 Mas	March	5 ,, ,, 7 ,,	East
辰 Tchin	April	7 ,, ,, 9 ,,	ESE $\frac{3}{4}$ E
巳 Sse	May	9 ,, ,, 11 ,,	SSE $\frac{3}{4}$ E
午 Ou	June	11 A.M. ,, 1 P.M.	South
未 Wi	July	1 P.M. ,, 3 ,,	SSW $\frac{3}{4}$ W
申 Chin	August	3 ,, ,, 5 ,,	WSW $\frac{3}{4}$ S
酉 Yeou	September	5 ,, ,, 7 ,,	West
戌 Sou	October	7 ,, ,, 9 ,,	WNW $\frac{3}{4}$ N
亥 Hai	November	9 ,, ,, 11 ,,	NNW $\frac{3}{4}$ W

There are two small compasses on opposite sides of the instrument, and the correct position of the planisphere is with the two compasses north and south of each other; that compass being at the north which has the word 子 Tsse engraved under it. This word stands for the month corresponding to December, and also indicates the winter solstice. The stellar division under it is No. xi., Hiu, containing stars in Aquarius. The winter solstice passed through this division at the epoch of the Emperor Yao B.C. 2350, when the Pleiades marked the vernal equinox. It would appear from this that the 28 Siou on the planisphere have been delineated in relation to the surrounding 12 branches according to the records in the ancient work, the Chou-King, which is believed to date back to the period of the Emperor Yao, B.C. 2350. The equator, however, is for about the epoch A.D. 600. The character of the instrument is modern, and possibly not earlier than the 19th. century.

The Chinese divide the heavens as seen in China into the 28 Siou or Stellar Divisions, and three great stellar spaces. The Stellar Divisions are measured on the equator rather than the ecliptic, and the great inequality in the angular intervals precludes the view that has been advanced by so many writers that they represent the daily stations of the Moon, and no satisfactory explanation has yet been found for this inequality. The subject of the Lunar Zodiac of the Chinese, and its relation to that of the Hindus and of the Arabs, has been extensively discussed by many oriental scholars.* The fact that these nations divide the ecliptic into 28 divisions with determinants in many cases identical, is a convincing argument of a common origin; there is, however, this difference, that whereas the determinants of the Nachshatras of the Hindus and the Manazil of the Arabs, are one or more individual stars, the Chinese adopt determining asterisms for each Siou.

* See the works of J. B. Biot, Sédillot, Weber, Ideler, Schlegel, Williams, and particularly of Prof. W. D. Whitney.

The Siou are numbered on the chart according to the previous table, and the Determining Asterisms are shown by *black rings* to the stars, which are conspicuously linked together. Very little consideration will suffice to show the incompatibility of many of them with the positions of the Moon in the Lunar Zodiac. Noticeable in this connection are the Siou Determining Asterisms 57 (Andromeda), 80 (Orion), 103 (Hydra), 108 (Crater), 111 (Corvus), and 20 (Scorpio), which are far removed from the ecliptic or the Moon's path. Schlegel refutes the idea that there was any connection between the Chinese asterisms and the Lunar Zodiac, and he considers that their origin was purely astrological. It is also remarkable that so conspicuous a constellation as Leo should not have been included in the determinants. The theory was advanced by Biot that these 28 asterisms were selected B.C. 2350 on account of their proximity to the equator. The fact that at this epoch the isolated cluster of the Pleiades marked the vernal equinox offers a plausible argument in support of that epoch being selected, but a reference to the chart accompanying Whitney's memoir on "The Lunar Zodiac,"* wherein these asterisms are delineated in relation to the equator at that epoch, shows too glaring inconsistencies for accepting Biot's view.† The only suggestion that seems to be left is that these asterisms were adopted as points of reference for celestial phenomena, and on this view it is not improbable that the coincidence of the Pleiades with the vernal equinox should have been taken for the epoch of such selection, especially as at that time history records that the Emperor Yao took interest in astronomy, and had certain astronomers attached to his court. This, however, leaves the question of the unequal angular intervals wholly unexplained.

The boundaries of the three great stellar spaces, Tsse-wi-houan (circumpolar region), Tai-wi-houan (part of Leo, Virgo, and Coma), and Tien-chi-houan (part of Hercules, Ophiuchus, and Serpens) are shown on the chart by *black stars*. The names are omitted, to avoid confusion, but they can be easily identified by the numbers attached to the boundary stars.

In the following table of asterisms identified on the planisphere the Chinese names are all taken from Schlegel, and the stars from modern star maps; nothing has been taken from the Chinese authorities mentioned above without verification. Naturally, there are many asterisms which it is impossible to determine with accuracy. In all authorities consulted there is an absence of uniformity in the linking of the stars, which adds much to the difficulty of identification; and particularly is this the case with

* *Oriental and Linguistic Studies*, second series, Cambridge, Mass., 1874.

† The declinations on the planisphere of the stars γ Pegasi, α Orionis, and α Virginis are sufficiently good for A.D. 600 to allow of their correction to B.C. 2350, from which, as the projection is equidistant, a roughly approximate equator for that epoch can be laid down. It is then seen that the positions of the determining asterisms of Siou XIII., XIV., XV. etc., to I. agree fairly with Whitney's chart, but from II. to XII. their positions are much in error.

the circumpolar stars. The pole of the planisphere is one of a chain of five large stars, the most conspicuous in the instrument. The five stars thus linked together are shown in the Chinese Atlas of Grimaldi, but not in De Guignes or Schlegel, and Williams shows only four stars. They consist of γ , β , 5 and 4 Ursæ Minoris, and a sixth magnitude star Bradley 1730, which last is the pole of the planisphere. The name of this star is Tien-tchou, meaning the Pivot of the Heavens. It is not identified by Reeves in his Appendix on Chinese Astronomy to Morrison's Chinese Dictionary, nor by any other authority except Grimaldi. The star Bradley 1730 was near to the pole of the equator at the assumed epoch A.D. 600. It is obvious that the name Tien-tchou could not have always designated this particular star. Schlegel, however, states that the name "Pivots of the Heavens" was also applied to all these five stars. Polaris cannot exactly be identified; it is probably a small star enclosed in the asterism 124.

The Milky Way, Tien-han (the Celestial River), is delineated with approximate correctness, though the bifurcation begins erroneously in Aquila.

Considering the scale of the planisphere, some of the stars and constellations seem to have been laid down with care and skill, while there are large errors in many others, and immense exaggeration in some clusters and groups.

Chinese Asterisms on Planisphere.

No.	Chinese Name.	Stars.
1.	KIO-SIOU.—I.	2 stars, α , ζ , Virginis.
2.	Tien-mun	89, 61, Virginis.
3.	Ping-sing	π , γ , Hydræ.
4.	Ping-tao	74, θ , Virginis.
5.	Tien-tien	σ , τ , Virginis.
6.	Yeou-chi-ti	η , τ , ν , Boötis.
7.	San-koung	21, 24, Groombridge 1991, Can. Ven.
8.	Hiouen-ko	γ Boötis.
9.	Tchao-yao	β Boötis.
10.	Kang-ho	ϵ , σ , ρ , Boötis.
11.	Ti-si	26, 12, 9, Boötis.
12.	Ta-kio	α Boötis.
13.	KANG-SIOU.—II.	4 stars, ϕ , ι , κ , λ , Virginis.
14.	TI-SIOU.—III.	4 stars, β , γ , ι , α , Libræ.
15.	Tso-chi-ti	ξ , π , ζ , Boötis.
15A.	Yeou-chi-ti	η , τ , ν , Boötis.
16.	FANG-SIOU.—IV.	4 stars, β , δ , π , ρ , Scorpii.
17.	Koan-so	Corona Borealis.

Chinese Asterisms on Planisphere—continued.

No.	Chinese Name.	Stars.
18.	Tsi-tsou	Stars in Lupus unidentified.
19.	Tsi-koung	ν , σ , τ , λ , μ , Coronæ ; μ , δ , Boötis.
20.	SIN-SIOU.—V.	3 stars, τ , α , σ , Scorpil.
21.	Hoan-tche	60, Bradley 2163, 2 stars unidentified, Herculis.
22.	Ti-tso	α Herculis.
23.	Hao	α Ophiuchi.
24.	WI-SIOU.—VI.	9 stars, ν , λ , κ , ι , θ , η , ζ , μ , ϵ , Scorpil.
25.	Kouei	α , ν , β , ζ , ϵ , Aræ.
26.	Tien-kiang	51, 44, θ , 36, Ophiuchi.
27.	KI-SIOU.—VII.	4 stars, γ , δ , ϵ , η , Sagittarii.
28.	Tien-pi	Corona Australis.
29.	Tien-yo	Stars and clusters in Sagittarius, unidentified.
30.	Tien-ki	μ , κ , Lyræ ; 90, θ , ρ , 68, 59, ϵ , ζ , Herculis.
31.	TEOU-SIOU.—VIII.	6 stars, ζ , τ , σ , ϕ , λ , μ , Sagittarii.
32.	Tien-pien	Stars in Aquila unidentified.
33.	Tchi-niu	ϵ , α , ζ , Lyræ.
34.	Ho-kou	β , α , γ , Aquilæ.
35.	Yeou-ki	μ , σ , δ , ν , ι , 42, κ , and 2 stars unidentified, Aquilæ.
36.	NIOU-SIOU.—IX.	6 stars, ν , α , β , ρ , π , σ , Capricorni.
37.	Tien-tien	Unidentified.
38.	Tso-ki	ρ Aquilæ, 14, 15, 13, γ , ζ , δ , α , β , Sagittæ.
39.	Lo-ien	ν , B.A.C. 7077, τ Capricorni.
40.	NIU-SIOU.—X.	4 stars, ϵ , μ , ν , 9, Aquarii.
41.	Tien-tsin	α , ν , σ , ν , ζ , ϵ , γ , δ , \circ , Cygni.
42.	HIU-SIOU.—XI.	2 stars, α Equulei, β Aquarii.
43.	Tchai-fou	Stars in Pegasus unidentified.
44.	Jin-sing	„ „
45.	WEI-SIOU.—XII.	3 stars, α Aquarii ; θ , ϵ , Pegasi.
46.	Fan-mou	π , η , ζ , γ , Aquarii.
47.	Li-koung	η , \circ , Pegasi.
48.	Li-koung	λ , μ , Pegasi.
49.	Li-koung	τ , ν , Pegasi.
50.	Loui-pi-tehin	ϵ , κ , γ , δ , Capricorni ; ι , σ , λ , ϕ , Aquarii ; 27, 29, 33, 30, Piscium.
51.	Tien-tsien	Stars in Piscis Australis unidentified.
52.	CHE-SIOU.—XIII.	2 stars, α , β , Pegasi.
53.	Loui-tien	31, ζ , 30, 55, 70, Pegasi ; θ Aquarii ?

Chinese Asterisms on Planisphere—continued.

No.	Chinese Name.	Stars.
54.	Pie-lie	ω , ι , θ , γ , β , Piscium.
55.	Tien-kiou	Stars in Andromeda unidentified.
56.	PI-SIOU.—XIV.	2 stars, α Andromedæ, γ Pegasi.
57.	KOU EI-SIOU.—XV.	16 stars, β , μ , ν , B.A.C. 100, ρ , π , δ , ϵ , ζ , η , Andromedæ; ψ , χ , ϕ , ν , 68, σ , Piscium.
58.	Wai-ping	α , ξ , ν , μ , ζ , ϵ , δ , Piscium.
59.	Tien-houan	Stars in Cetus unidentified.
60.	Tou-sse-koung	β Ceti.
61.	Tien-tsang	ν , τ , ζ , θ , η , ι , Ceti.
62.	LEOU-SIOU.—XVI.	3 stars, α , β , γ , Arietis.
63.	Ta-ling	64, θ , Gr. 590, κ , 30, ω , ρ , 16, Persei— stars surrounding β Persei.
64.	Tien-ta-tsiang-kiun	Stars in Triangulum and Perseus unidenti- fied.
65.	WEI-SIOU.—XVII.	3 stars, μ , 39, 41, Arietis.
66.	Yeou-kang	Stars in Aries unidentified.
67.	Tso-kang	„ „
68.	Tien-yuen	π , δ , ϵ , ζ , η , Eridani; ϵ , π , Ceti; τ^1 , τ^2 , τ^3 , τ^4 , τ^5 , τ^6 , Eridani.
69.	Kiouen-chi	ν , ϵ , 50, ξ , ζ , σ , Persei.
70.	MAO-SIOU.—XVIII.	7 stars, Pleiades.
71.	Tien-kou	α Aurigæ.
72.	Wou-tchai	ι , α , β , θ , Aurigæ; β Tauri.
73.	PI-SIOU.—XIX.	8 stars, Hyades (? α , θ , π , γ , δ^1 , δ^3 , ϵ , λ).
74.	Tchu-wang	ζ , 114, 109, ι , τ , χ , 37, Tauri.
	?	ν , τ , ν , Aurigæ.
75.	San-tchou	{ Three triplets of stars in Auriga : ν , τ , ν ; ϕ , χ , 14 ; ϵ , η , ζ . (near α Aurigæ).
76.	San-tchou	
76A.	San-tchou	
77.	Yo-tsing	τ Orionis ; β , ψ , λ , Eridani.
78.	Kiou-yeou	Stars in Eridanus unidentified.
79.	TSOU I-SIOU.—XX.	3 stars, λ , ϕ^1 , ϕ^2 , Orionis.
80.	TSAN-SIOU.—XXI.	7 stars, α , γ , β , κ , ζ , ϵ , δ , Orionis.
81.	Kiun-tsing	ν , λ , κ , ι , Leporis.
82.	Ping. ? (tsing)	μ , ϵ , Leporis.
83.	Tien-tsse	α , β , γ , δ , Leporis.
84.	TSING-SIOU.—XXII.	8 stars, ϵ , 36, ζ , λ , μ , γ , ξ , Geminorum.
85.	Wou-heou	θ , τ , ι , ν , κ , Geminorum.
86.	Tien-tsoun	δ , 56, 63, Geminorum.
87.	Pe-ho	α , β , ρ , Geminorum.

Chinese Asterisms on Planisphere—continued.

No.	Chinese Name.	Stars.
88.	Nan-ho	α, β, γ , Canis Minoris.
89.	Tien-lang	α Canis Majoris.
90.	Kiun-chi	Stars in Canis Major and Columba unidentified.
91.	Hou-chi	$\rho, 202, o, \eta, \epsilon, \delta, \tau, \xi, o^2$, Argûs.
92.	Lao-jin	α Argûs.
93.	KOUEI-SIOU.—XXIII.	4 stars, $\gamma, \delta, \theta, \eta$, Cancri.
94.	Chang-tai*	ι, κ , Ursæ Majoris.
95. }	Hien-youen-ki	31, 35, o, B.A.C. 3097, Lynceis; 64, ι, ξ , Cancri;
96. }		$\rho, 31, o, \alpha, \eta, \gamma, \zeta, \mu, \epsilon, \lambda$, Leonis.
97.	LIOU-SIOU.—XXIV.	8 stars, $\theta, \omega, \zeta, \epsilon, \delta, \sigma, \eta, \rho$, Hydræ.
98.	Wen-tchang	$o, 5, 23, v, \phi, \theta, 15$, Ursæ Majoris.
99.	Tchoung-tai*	λ, μ , Ursæ Majoris.
100.	SING-SIOU.—XXV.	7 stars, ι, τ^2, τ^1 , B.A.C. 3226, $\alpha, 27, 26$, Hydræ.
101.	Tien-lao	36, 37, 39, 43, 44, 60, Ursæ Majoris.
102.	Hia-tai*	ν, ξ , Ursæ Majoris.
103.	TCHANG-SIOU.—XXVI.	6 stars, $\nu, \mu, \lambda, v^1, \kappa$, one star unidentified, Hydræ.
104.	Tien-miao	Stars in Argo unidentified.
105.	Chi	? χ, ψ , 2 stars unidentified, Ursæ Majoris.
106.	Wou-ti	$\beta, 88$, 3 stars unidentified, Leonis.
107.	Noui-ping	o, π, ν, ξ , Virginis.
108.	YIH-SIOU.—XXVII.	22 stars in Crater, not all identified.
109.	Khi-fou	Stars in Centaurus and Crux, not identified.
110.	Lang-wei	Coma Berenicis.
111.	TCHIN-SIOU.—XXVIII.	7 stars, $\eta, \delta, \gamma, \epsilon, \alpha, \zeta, \beta$, Corvi.
112.	Kou-leou	Stars in Centaurus unidentified.
113.	Nan-mun	α, β , Centauri.
114.	Pe-teou	$\alpha, \beta, \gamma, \delta, \epsilon, \zeta, 81, \eta$, Ursæ Majoris.
115.	Tien-li†	probably Fl. 66, Hev. 51, Fl. 42, Pi. xi. 59, Ursæ Majoris.
116.	Tien-tsiang	θ, ι, κ , Boötis.
117.	Tien-pei	ι Hercules, γ, β, ν, ξ , Draconis.
118.	Tsaou-fou	Stars in Cepheus unidentified.
119.	Tai-tsze	γ Ursæ Minoris.

* 94, 99, and 102 called San-tai.

† All differ as to the position of these four stars in the quadrilateral of Ursæ Major. Grimaldi shows undoubtedly H. 66, Pi. xi., 59, and Hev. 51, with another star which may be Fl. 76. Reeves and Williams do not identify, and Schlegel omits them altogether.

Chinese Asterisms on Planisphere—continued.

No.	Chinese Name.	Star.
120.	Tien-ti-sing	β Ursæ Minoris.
120A.	Chou-tsse	5 Ursæ Minoris.
120B.	Hao-fi	4 Ursæ Minoris.
120C.	Tien-tchou	? Bradley 1730, Camelop.
121.	Wang-liang	β , η , μ , α , ζ , Cassiopeiæ.
122.	Ko-tao	ϵ , δ , θ , ξ , Cassiopeiæ ; 22 Andromedæ.
123.	Noui-Kiai	28, 23, τ , 16, 5, σ , Ursæ Majoris.
124.	Kao-tchin	ζ , ϵ , δ , 3 small stars round Polaris, Ursæ Minoris.

The Boundary Stars of the three Stellar Spaces.

TSSE-WI-HOUAN.

This includes Ursa Minor and circumpolar stars, and consists of two chains of eight and seven stars respectively.

No.	Chinese Name.	Star.
125.	Chang-tching	γ Cephei.
126.	Chaou-wei	ρ „
127.	Chang-wei	κ „
128.	Chao-fou	ϕ Draconis.
129.	Chang-fou	ζ „
130.	Chaou-tsai	η „
131.	Chang-tsai	θ „
132.	Tso-tchou	ι „
133.	Yeou-tchou	α „
134.	Chaou-wei	κ „
135.	Chang-fou	λ „
136.	Chao-fou	Pi. x. 126, Ursæ Majoris.
137.	Chao-wei	24 „
138.	Chang-wei	55 Camelopardi.
139.	Chao-tching	43 „

TAI-WI-HOUAN.

Includes stars in Leo, Virgo, and Coma, and consists of two chains of five and six stars respectively in the present planisphere, but of five and five stars respectively in Grimaldi, Schlegel, and Williams.

No.	Chinese Name.	Star.
140.	Tai-yin-toung-mun	36 Comæ.
141.	Tchoung-hoa toung-mun	ϵ Virginis.
142.	Tai-yang toung-mun	δ „
143.	Tso-yi-mun	γ „
144.	Tso-tchi-fa	η „

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No.	Chinese Name.	Star.
145.	Yeou-tchi-fa	β Virginis.
146.	Chang-tsiang	σ Leonis.
147.	Tsse-tsiang	ι „
148.	Tsse-siang	θ „
149.	Chang-siang	δ „
150.	Hou-fun	γ^2 „

TIEN-CHI-HOUAN.

Includes stars in Hercules, Ophiuchus, and Serpens, and consists of two chains of eleven stars each.

No.	Chinese Name.	Star.
151.	Wei	δ Herculis.
152.	Tchao	λ „
153.	Kiou-ho	μ „
154.	Yen	\circ „
155.	Thsi	ζ Aquilæ.
156.	Ou	θ Serpentis.
157.	Siu	η „
158.	Toung-hai	ζ „
159.	Youe	ν Ophiuchi.
160.	Nan-hai	ξ Serpentis.
161.	Soung	η Ophiuchi.
162.	Tching	ζ Ophiuchi.
163.	Tsou	ϵ „
164.	Liang	δ „
165.	Pa	ϵ Serpentis.
166.	Chou	α „
167.	Thsin	δ „
168.	Tcheou	β „
169.	Han	γ „
170.	Tsin	κ Herculis.
171.	Ho-kien	γ „
172.	Ho-tchoung	β „